US NSDI: The Business Case and Operational Framework

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Title of Paper

"How the NSDI reaches significant savings for data collection and use, reduces duplication of efforts among agencies, improves data quality and makes geographic data more accessible to the public".

Outline

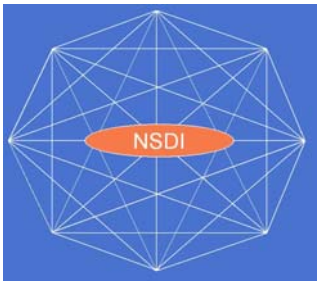
- The NSDI – Keys to Success
- Governance – Oversight
- Data Collection and Use – Partnerships
- Reducing Duplication – Geospatial Line of Business
- Improving Data Quality – Standards Implementation
- Access to Geographic Data – Public Expectations

National Spatial Data Infrastructure (NSDI)

- **NSDI was conceptualized in 1992-93**

  Vision

  "....that current and accurate geospatial data will be readily available on a local, national and global basis to contribute to economic growth, environmental quality and stability and social progress".



NSDI (as defined in EO 12906)

- "National Spatial Data Infrastructure" ("NSDI") ..... the technology, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve utilization of geospatial data".
- The components of the NSDI are **data themes, metadata, the National Spatial Data Clearinghouse, standards, and partnerships.**
- Some evolution has occurred over the years with the advancement of the www, web services, applications, service oriented architectures, etc.

Keys to Success

- Clearly defined, address the identity crisis
- Strong Leadership and champions
- Unified business case that is relevant and with incentives
- Sustainable operations and funding models
- Marketing/Communications Strategy
- Expanding the user base and types

FGDC Governance

- 1990: Revision of OMB Circular A-16 formally establishes FGDC
- 1994: **Executive Order 12906** calls for development of the National Spatial Data Infrastructure (NSDI) and charters FGDC to lead and coordinate the effort
- 2002 OMB Circular A-16, Revised
  - Established OMB as Vice Chair
- E-Government Act 2002, Section 216
- 2003 Executive Order 12906, Revised

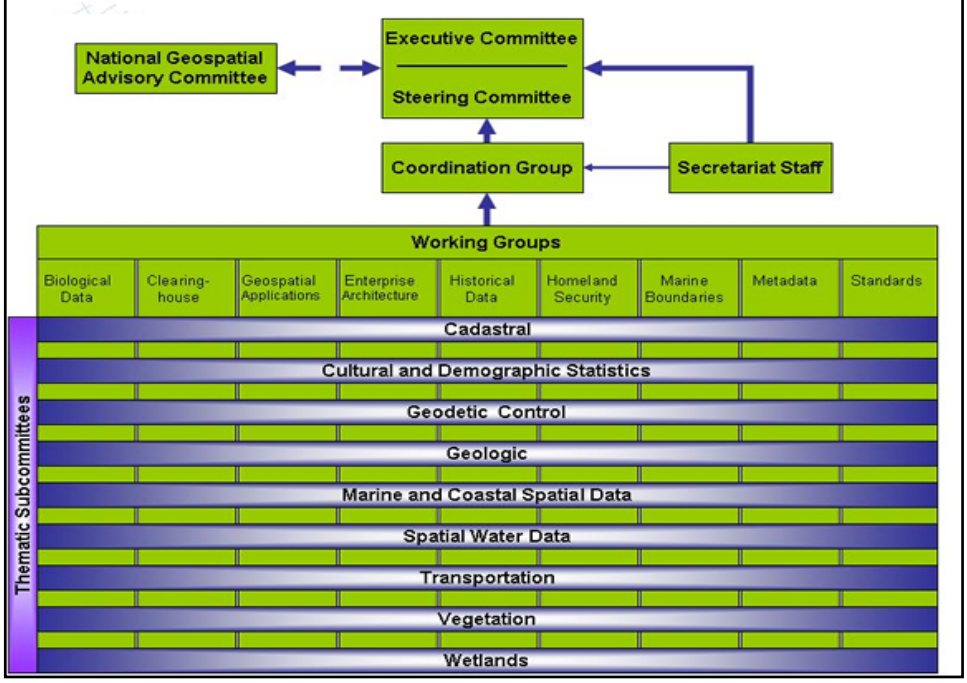
The Federal Geographic Data Committee (FGDC) is an interagency committee that provides leadership, guidance, and facilitates coordination between agencies, governments, academia, industry and professional organizations in developing geographic information and technology critical to serving the needs of the Nation. The following are its members:

FGDC Governance cont.

- **FGDC Steering Committee**
  - Members are of Senior Agency Officials for Geospatial Information (SAOGIs), who are designated as directed by OMB Memorandum M-06-07.
  - SAOGIs are policy-level officials (Assistant Secretary/CIO level) who have responsibility, accountability, and authority for geospatial activities with their organizations.
  - Secretary of DOI (Chair) and Deputy Director for Management of OMB (Vice Chair)
- New **Executive Committee**
  - Provides assistance to the FGDC Chair and Vice Chair; facilitate the activities of the Steering Committee
  - Subset of Steering Committee - Consists of agencies with major geospatial responsibilities (DOI, USDA, DHS, DOD, DOC, EPA)
- **FGDC Coordination Group** –
  - Working-level group – Senior geospatial program managers Operation oversight
  - Provides operational oversight for Geospatial LoB

FGDC Working Groups/Thematic Subcommittees

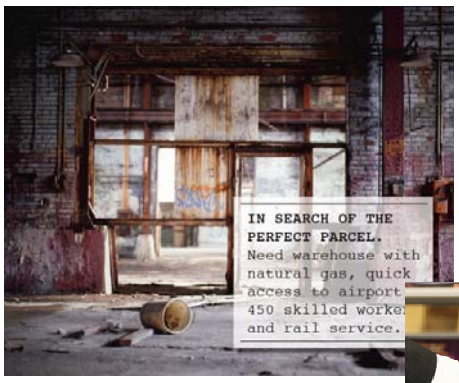
- Conduct ongoing standards & data activities

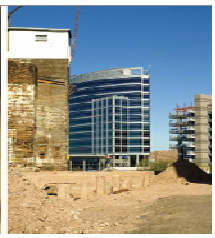


Geospatial Information – the Business Case

- Transcends across many of the our business needs …Whether you are expanding the power grid, building the countries transit system, measuring global climate change, enabling environmental management, supporting critical infrastructure…..geospatial information and technology is a powerful tool to help solve problems….and improve decision-making





maps increase economic development

maps improve your children's schools

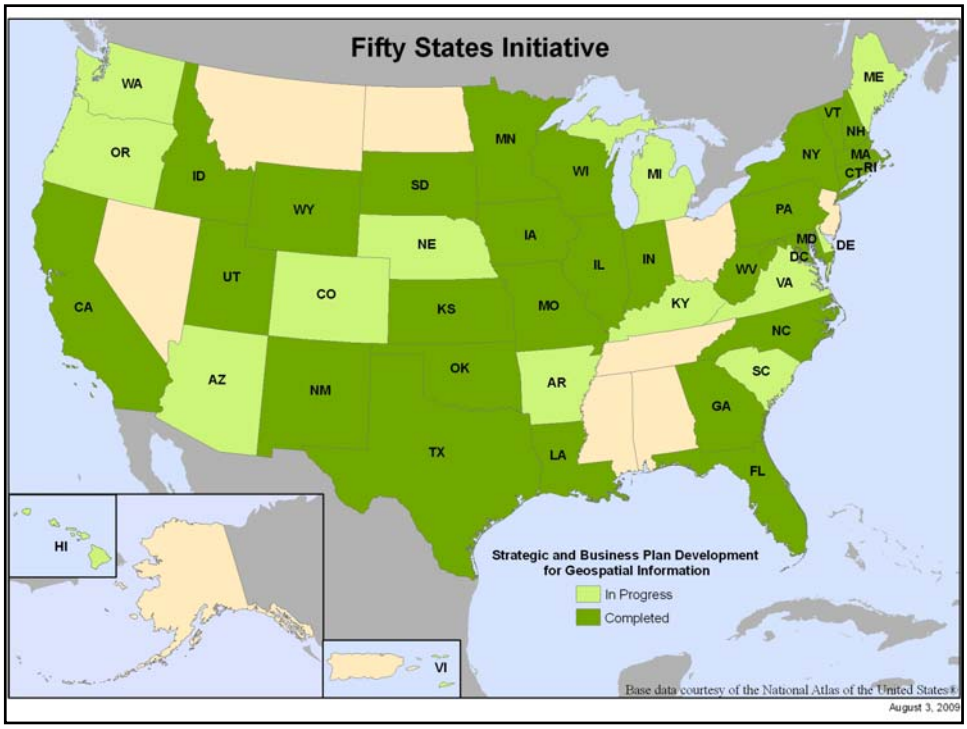
13

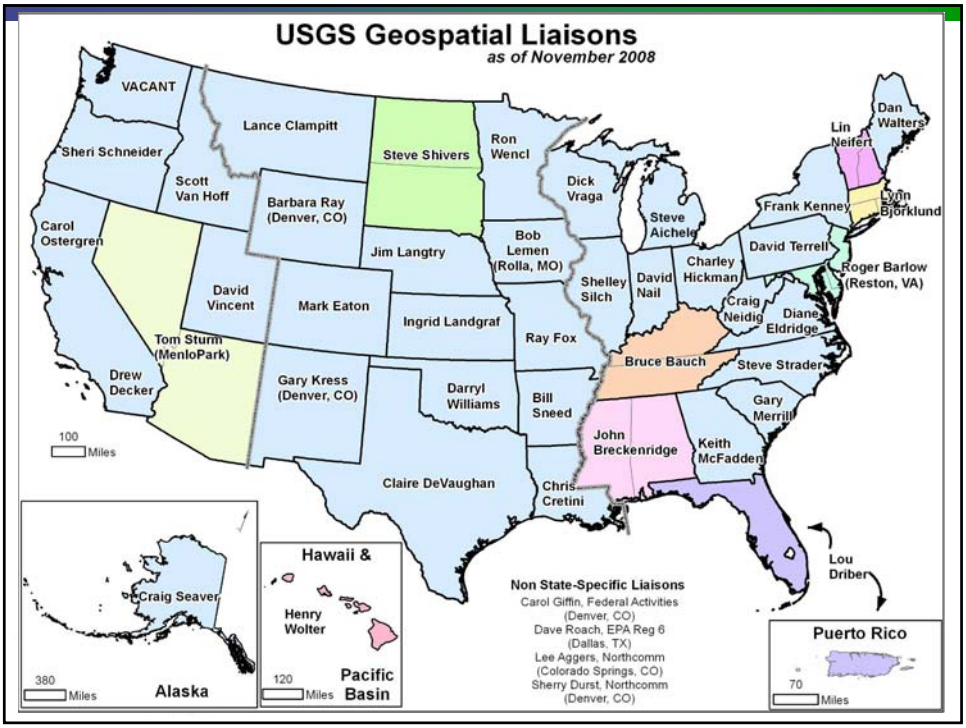
maps help find, develop and manage new sources of energy

14

The Fifty States Initiative

- **Strategic and Business Plans serve to guide data collection and partnerships**
- Explanation: A fundamental part of the Fifty States Initiative is the adoption of routine strategic and business planning activities that include all of the stakeholder communities.
- These planning exercises bring disparate groups together to work toward common goals. Standardized templates were developed for this initiative to enhance planning efforts.
- Marketing materials have also been developed to help bring these planning efforts to the attention of government executives and elected officials to obtain their help in implementing the plans.





TNM FY08 Data Partnerships

	NGP Partnership and Mapping Contracts Funding	Partner Funding	Total Project Cost	Leveraging Ratio
Imagery	$1,596,902	$30,440,552	$32,037,454	20.1
Elevation	$2,239,364	$21,326,959	$23,566,322	10.3
Hydrography	$423,766	$1,033,766	$1,457,532	3.4
Names	$253,749	$253,749	$378,749	1.5
Transportation	$512,758	$6,559,542	$7,072,300	13.8
Structures	$329,528	$319,295	$648,823	2.0
Boundaries	$20,000	$20,000	$40,000	2.0
NSDI	$311,845	$414,359	$726,204	2.3
TOTAL	$5,687,912	$60,368,222	$65,927,384	11.6

Imagery for the Nation Initiative

- Organized effort to acquire imagery over the entire US
- Initiated by National State Geographic Information Council
- Incorporates current USDA and USGS programs
- Includes multi-resolution acquisition (6", 1', 1-meter)
- Repeat cycles of 1 to 5 years
- Imagery stays in public domain
- Consistent national standards (e.g. image type, quality & security concerns)
- Federal government funds standard products

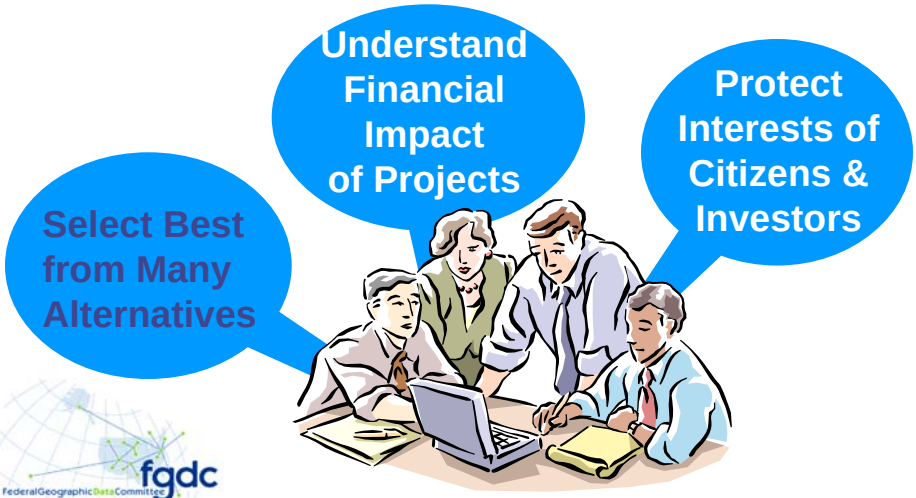
Quantitative Benefits – Statistical Analysis

Baseline – Current State Costs
10 Year Average Annual Cost: $191,714,804

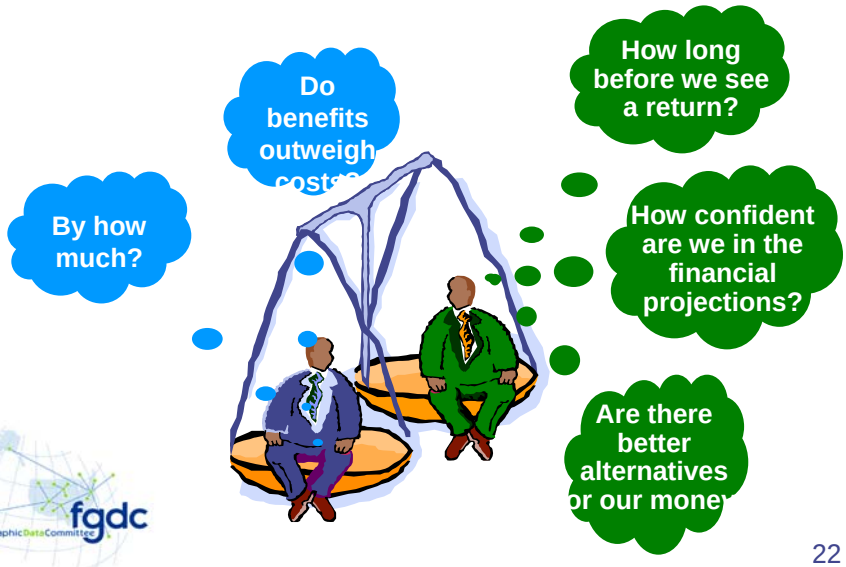
IFTN – Future State Costs
10 Year Average Annual Cost: $143,992,662

Delta (Current State Costs vs. Future State Costs)
10 Year Average Annual Savings: $47,722,142

Investment Analysis Is a Fiduciary Responsibility and Public Duty



Financial Analysis Quantifies Investment Value



Geospatial Line of Business

Optimizing Geospatial Information & Technology

Lines of Business Opportunities

OMB and the LoB Task Forces are focused on business-driven, common solutions developed through architectural processes.

The following LoBs were launched in FY 2006:

- **Budget Formulation and Execution**
- **IT Infrastructure Optimization**
- **Geospatial**

Common Solutions: A business process and/or technology based shared service made available to government agencies.

Business Driven (vs. Technology Driven): Solutions address distinct business improvements that directly impact LoB performance goals.

Developed Through Architectural Processes: Solutions are developed through a set of common and repeatable processes and tools.

Geospatial Line of Business (LoB)

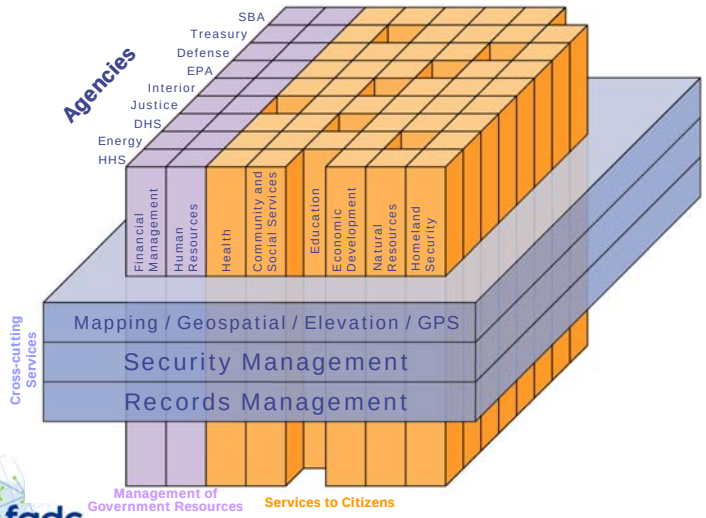
- Is a government-wide initiative supported by OMB promoting effective geospatial investments and better planning and performance across the Federal government.
- Provides an operational framework where agencies can

  ....plan, invest, execute, and measure

Geospatial LoB...

A business management approach to organize and govern our efforts....to improve planning and investment strategies...that result in common solutions that are effective and efficient... using an enterprise architecture...to serve our business needs and the citizens

LoBs and Services

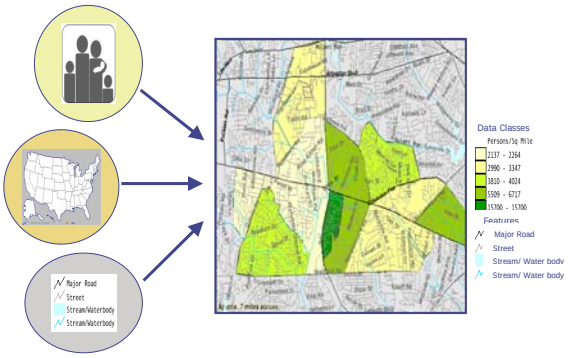


Geospatial LoB

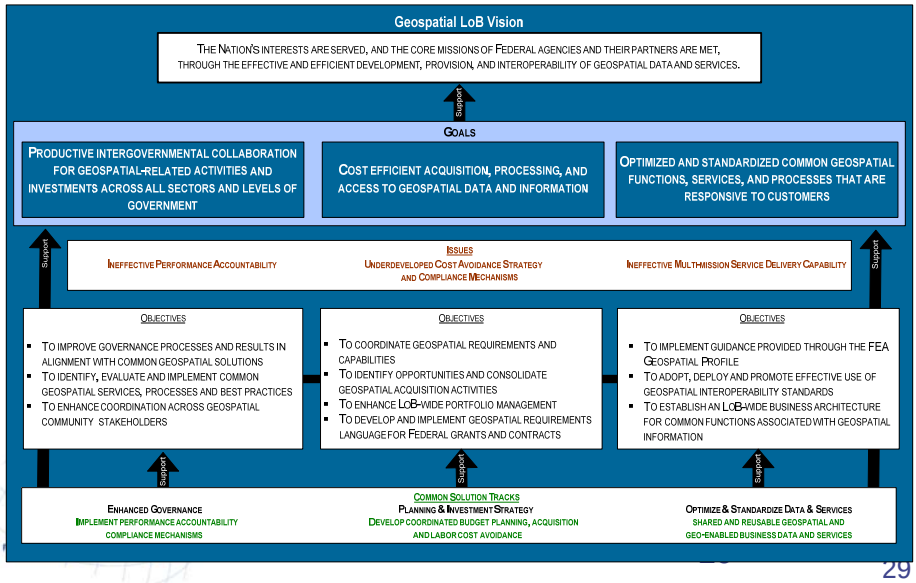
The Nation's interests are served, and the core missions of Federal agencies and their partners are met, through the effective and efficient development, provision, and interoperability of geospatial data and services...

Goals

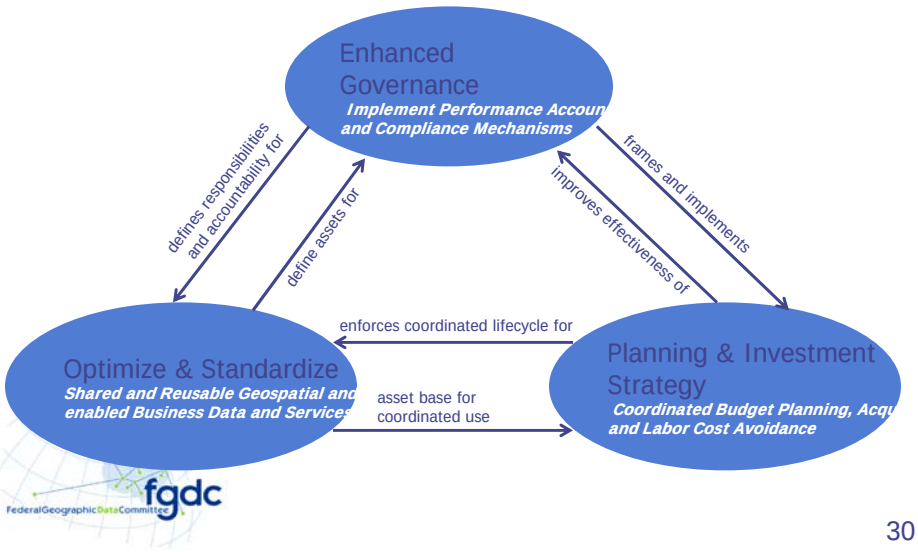
- Collaboration for geospatial-related activities and investments across all sectors and levels of government
- Optimized and standardized common geospatial functions, services, and processes
- Cost efficient acquisition, processing, and access to geospatial data and information



Common Solutions Map



Common Solution Framework



Key Benefits Summary

Solution Track
Enhanced Governance

- Clarified performance responsibilities and accountability
- Establishment of a more collaborative and performance oriented culture

Solution Track
Planning & Investment Strategy

- Multi-mission delivery capabilities
- More effective investments through increased sharing and reuse
- Nationally significant data managed as a Federal portfolio

Solution Track
Optimize & Standardize Data and Services

- Better service to agencies and citizens through increased functionality and more coordinated access to geospatial information
- Improved data, services and tools

Geospatial SmartBUY Purchase Agreement

- Most far-reaching and inclusive Federal BPA for geospatial software, data, and other products
- May be available to state, local, and tribal governments
- Provides the foundation for optimizing and consolidating Government's geospatial-related investments
- Offers greater transparency into Federal spending
- Leverages the government's buying power to purchase commercial off-the-shelf software licenses, resulting in:
  - Increased accessibility
  - More products
  - Greater discounts
  - Reduced contract administration

Reducing Duplication

- The Geo LOB conducted three data calls to collect data on geospatial investments and activities across the federal government

2006

- Broad-focus quantitative data call
- Intended to help inform writing of the CS/TA

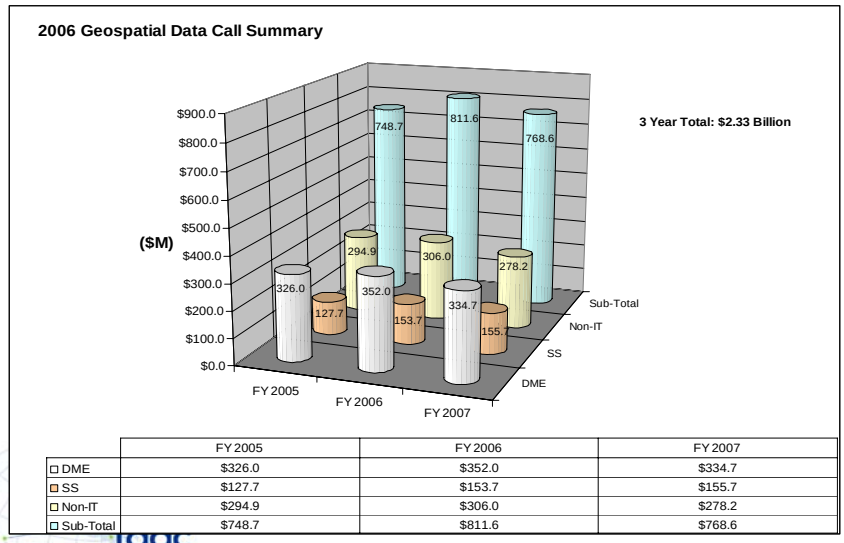
2007

- Limited focus quantitative data call
- Geospatial Data and Services Priorities Survey – a qualitative data call on OMB Circular A-16 priorities

2006 Approach

- Conducted April - June of 2006 and covered the years 2005 to 2007
- Requested cost data and information about lifecycle-stage (e.g., development stage, or steady state project)
- Used a broad approach asking for information about:
  - **OMB Circular A-16 data theme** (e.g., Cadastral, Transportation, Vegetation, Wetlands, etc.)
  - **Investment Type** (Hardware, Software, Data, Services, and 'Other')
  - **Geospatial Capability** (e.g., Feature Server, Geocoder, GIS Server, Mapping Client, etc.)

2006 Level of Investment



	FY 2005	FY 2006	FY 2007
DME	$326.0	$352.0	$334.7
SS	$127.7	$153.7	$155.7
Non-IT	$294.9	$306.0	$278.2
Sub-Total	$748.7	$811.6	$768.6

DME = Development, Modernization, or Enhancement; **SS** = Steady State

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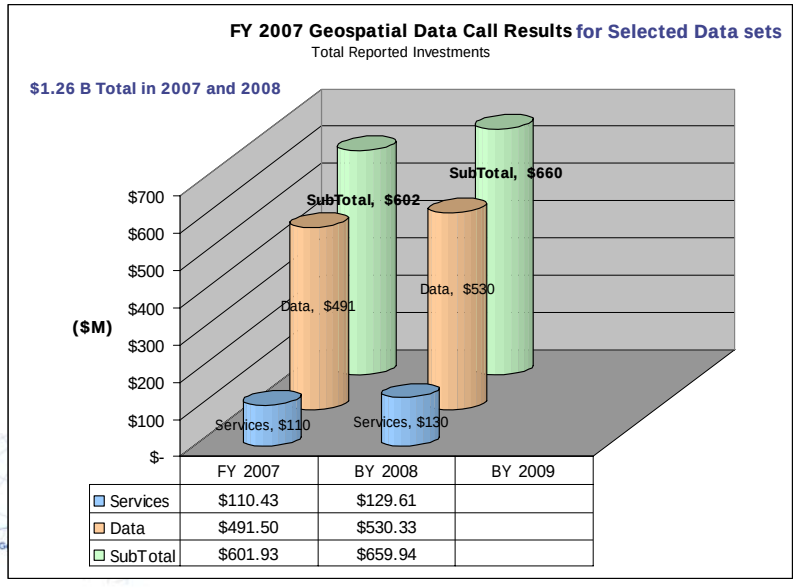
Lessons Learned from 2006

- Across government, we should enhance the capability to report geospatial investments and activities in an accurate, consistent, and less burdensome way.
- Without standard definitions and consistent agency reporting, information obtained from data calls of this sort will remain difficult to capture, be non-conclusive, and have limited utility.
- The focus of the 2006 data call was likely too broad. Future data calls should narrow the focus and concentrate on priority data sets.
- Despite data call issues, we saw that the federal government could possibly realize potential cost savings by leveraging SmartBuy or other aggregate purchasing programs.

2007 Desired Outcomes

- Through lessons learned from the 2006 data call, the Geospatial LoB developed a reporting approach designed to:
  - Develop a more accurate and targeted A-16 investment baseline.
  - Capture current data related to future Federal enterprise data and services priorities.
  - Capture additional data/service attribute requirements for high priority datasets.
  - Highlight and prioritize current and future common capability requirements.
  - Develop a better understanding of how agencies use A-16 data and services to meet mission requirements

2007 Level of Investment



	FY 2007	BY 2008	BY 2009
Services	$110.43	$129.61	
Data	$491.50	$530.33	
SubTotal	$601.93	$659.94	

2007 Key Findings

- The level of geospatial investment was relatively consistent for the three year reporting period.
- Fifty two percent (52%) of agencies reported a three year average of less than one million ($1M) per year in selected geospatial data and services investments
- As in 2006, a high degree of redundant investment types was not readily apparent in comparison with other LoB initiatives

Cost Data Issues

- Gathering data on geospatial investment relies almost completely on agency self reporting. Additionally, there are few geospatial investment mechanisms in federal financial and acquisition systems that allow for a reliable and accurate automated accounting of geospatial investment.
- The current designation of a geospatial investment as either Information Technology (IT) or Non-IT can have variable and arbitrary impact on whether the investment is included in a data call exercise such as this one.

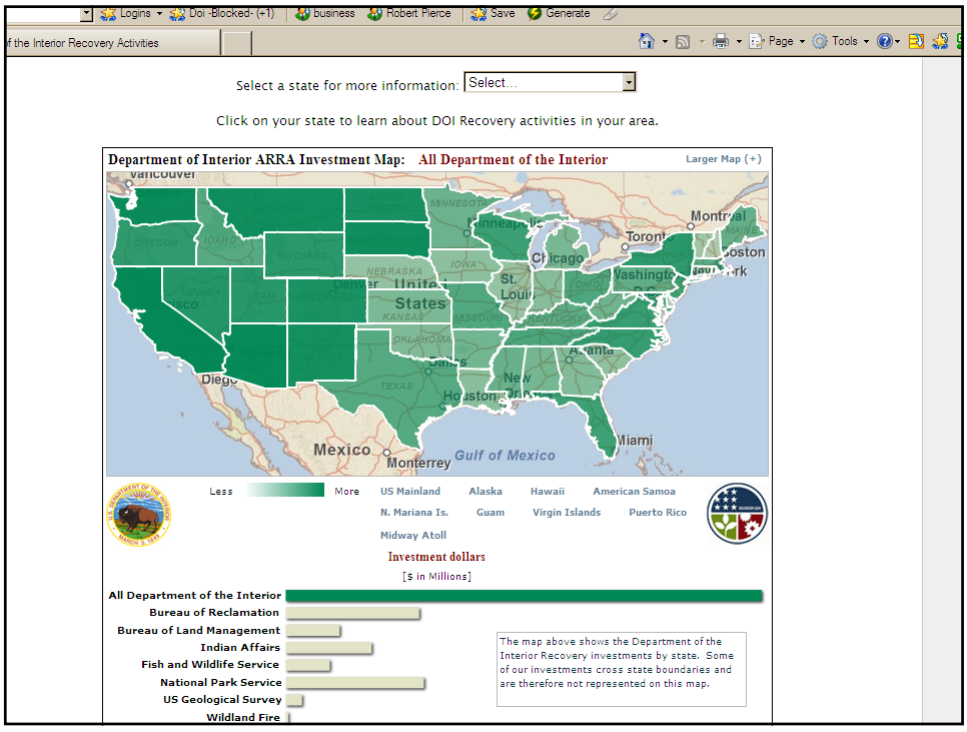
Lessons Learned

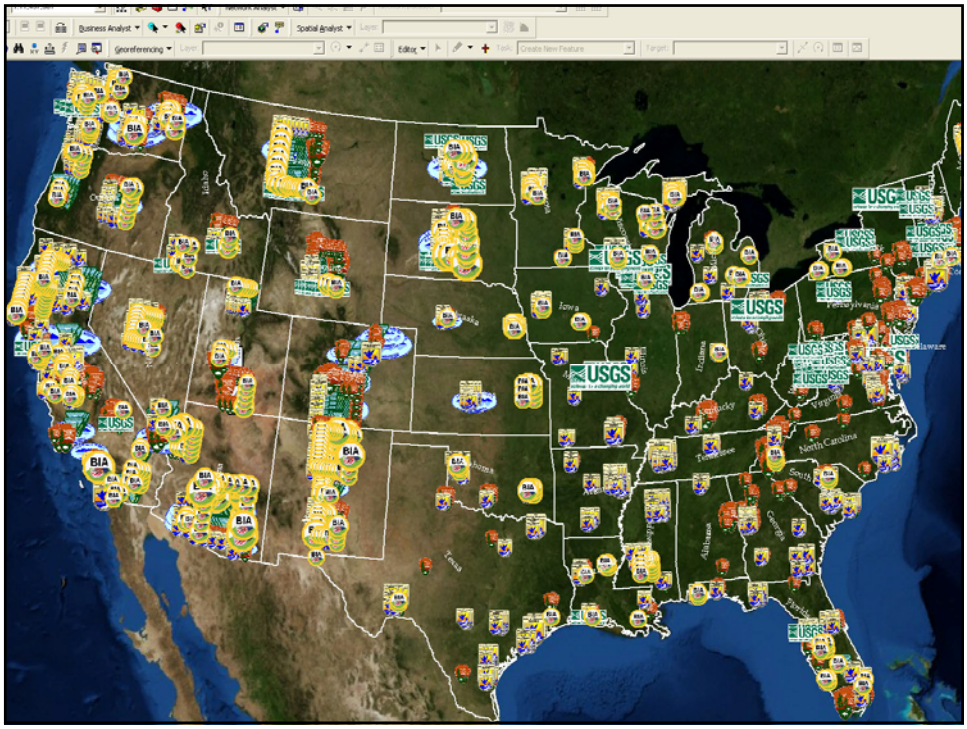
- There is a clear need to implement geospatial investment coding mechanisms in federal financial and acquisition systems that allow for a reliable and accurate automated accounting of geospatial investment.

- It may be more effective to work on influencing lead federal agency NSDI Strategic Plans and promoting a more developed portfolio management capability than to conduct further investment analyses of agency reported investments until further investment coding mechanisms are in place.

Recovery.gov - www.recovery.gov

- Supporting the development of the American Recovery and Reinvestment Act (ARRA) of 2009, Recovery.gov site
- Transparency and accountability
- Management of application transitioned from OMB to the Recovery Accountability and Transparency Board (RATB)
- Request for Proposals issued to further support the geospatial capabilities
- Currently at version 1.0, geospatial capabilities to be included in version 2.0





Data.gov – www.data.gov

- Purpose: to increase public access to high value, machine readable datasets generated by the Executive Branch of the Federal Government.
- Catalog-based access
  - "Raw" Data Catalog
  - Tool Catalog
  - Geodata Catalog

fgdc
Federal Geographic Data Committee

Summary

- Value proposition and incentives are key
- No comprehensive information/data on government-wide cost savings – antidotal at best
- There are opportunities to deduce duplication when using effective planning mechanisms
- Implementation of standards can enhance data quality
- The public expects access to geospatial data

Thank You!